

REMARKS

Reconsideration of the present application, in view of the arguments presented herein, is respectfully requested

I. STATUS OF THE CLAIMS

Claims 1, 2, 5-8, 12, 13, 16-19, 22-23 and 26-31 are pending in this application.

II. Claim Rejections under 35 U.S.C. §103

(i) Claims 1, 5-6, 12, 16-17 and 27-31 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,196,360 to Doan et al (hereinafter Doan) in combination with U.S. Patent No. 5,766,997 to Takeuchi (hereinafter Takeuchi) and U.S. Patent Application Publication No. 2002/0151170A1 to Maex et al. (“the Maex publication”).

(ii) Claims 2, 7-8, 13, 18-19, 22-23 and 26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the combination of Doan with Takeuchi and Maex as applied to claims 1, 5-6, 12, 16-17 and 27-30 above, and further in view of U.S. Patent No. 6,503,840B2 to Catabay et al (hereinafter Catabay), U.S. Patent No. 6,664,166 B1 to Jaiswal et al (hereinafter Jaiswal) and U.S. Patent No. 6,775,046 B2 to Hill et al (hereinafter Hill).

In response, it is submitted that the rejection to claims 1, 12, 19, 23 and 31 should be withdrawn for at least the reasons set forth below.

The Doan, Takeuchi, Catabay, Jaiswal, Hill and Maex references each fail to teach or suggest a method for fabricating a semiconductor device which includes forming a Ni-based metal layer comprised of a nickel alloy for silicide which is a nickel alloy layer including greater than 0 to about 20 % of a material selected from the group consisting essentially of Ta, Zr, Ti, Hf, W, Pt, Pd, V, Nb, or any combination thereof as essentially recited in claims 1, 12, 19, 23 and 31.

The Examiner concedes that Doan fails to teach or suggest a method which includes forming a Ni-based metal layer comprised of a nickel alloy for silicide as recited in claims 1, 12, 19, 23 and 31. **(See page 3 of the Office Action dated November 28, 2006).** In addition, the Examiner also concedes that Doan and Takeuchi fails to teach or suggest a nickel alloy for silicide which includes any of the following materials Ta, Zr, Hf, Pt, Pd, V, Nb or any combination of these materials. **(See page 5 of the instant Office Action).**

Furthermore, it is again noted for the record that Takeuchi besides failing to teach or suggest using the specific type of nickel alloy layer for silicide recited in claims 1, 12, 19, 23 and 31, Takeuchi also fails to teach or suggest even using alloys for its metal layer for silicide altogether. Takeuchi does not expressly mention using alloys for its metal layers anywhere in the reference, nor does the Takeuchi reference provide any motivation whatsoever for using alloys for its metal layers. Thus, the disclosure of Takeuchi is insufficient for teaching or suggesting the nickel alloy layer for silicide as recited in claims 1, 12, 19, 23 and 31.

Moreover, the Maex reference cannot cure the above noted deficiencies of the Doan and Takeuchi references because at the very least the teachings of the Maex reference would lead one skilled in the art away from forming a Ni-based metal layer comprised of the nickel alloy for silicide which is a nickel alloy layer including greater than 0 to about 20 % of a material selected from the group consisting essentially of Ta, Zr, Ti, Hf, W, Pt, Pd, V, Nb, or any combination thereof as essentially recited in claims 1, 12, 19, 23 and 31. It is well known under the U.S. patent laws, that a prior art reference that teaches away or leads away from a claimed invention is a significant factor in rebutting obviousness. **(See MPEP 2145).**

In particular, Maex teaches away or leads away from providing a Ni-based metal layer comprised of a nickel alloy for silicide by teaching that it is preferable to form alloys wherein nickel is included in the alloy in lesser amounts than the other constituent(s) of the alloy.

Specifically, Maex teaches that it is preferable to form alloy layers which include nickel in amounts of less than 50%, more preferably less than 25%, more preferably less than 15%, even less than 10% and even as low as 1%. (See paragraphs [0014], [0019] and [0082] of Maex). Thus, based upon the above-mentioned teaching of Maex, one skilled in the art would likely not form a nickel based alloy layer as required by claims 1, 12, 19, 23 and 31 but would likely instead form an alloy layer which was not nickel based and which included nickel in amounts of less than 50% down to about 1%.

Consequently, for at least the reasons set forth above, even if Doan and/or Takeuchi were modified based upon the teachings of Maex, this combination would not provide sufficient motivation to one skilled in the art to utilize a method of fabricating a semiconductor device which included forming a Ni-based metal layer comprised of the nickel alloy for silicide which is a nickel alloy layer including greater than 0 to about 20 % of a material selected from the group consisting essentially of Ta, Zr, Ti, Hf, W, Pt, Pd, V, Nb, or any combination thereof as essentially recited in claims 1, 12, 19, 23 and 31. Thus, the combination of Doan and/or Takeuchi with Maex would still fail to teach or suggest all of the features recited in claims 1, 12, 19, 23 and 31.

In addition to the reasons discussed above, there are other deficiencies with the Maex reference. Namely, substantially the entire disclosure of Maex is directed to cobalt compounds and cobalt alloys. Accordingly, one skilled in the art viewing the teaching of Maex would most likely form an alloy layer which included cobalt. Cobalt alloy layers are clearly different alloy layers than the specific nickel alloy layer recited in claims 1, 12, 19, 23 and 31 which do not include cobalt. Thus, the teachings of Maex even if combined with Doan and/or Takeuchi would still fail to cure the above noted deficiencies of the Doan and Takeuchi references with regard to the specific nickel alloy layer recited in claims 1, 12, 19, 23 and 31.

Lastly, Catabay, Jaiswal and Hill references each also fail to cure the above noted deficiencies of the Doan, Takeuchi and Maex references because the Catabay, Jaiswal and Hill references also at the very least fail to teach or suggest a method of fabricating a semiconductor device, which includes a Ni-based metal layer comprised of the nickel alloy for silicide which is

a nickel alloy layer including greater than 0 to about 20 % of a material selected from the group consisting essentially of Ta, Zr, Ti, Hf, W, Pt, Pd, V, Nb, or any combination thereof, as essentially recited in claims 1, 12, 19, 23 and 31.

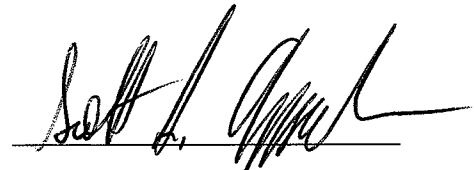
Therefore, for at least the reasons set forth above, removal of the rejections to claims 1, 12, 19, 23 and 31 is respectfully requested. As claims 2 and 5-8 depend from and incorporate all of the limitations of claim 1, claims 13 and 16-18 depend from and incorporate all of the limitations of claim 12, claim 22 depends from and incorporate all of the limitations of claim 19, and claim 26 depends from and incorporate all of the limitations of claim 23, withdrawal of the rejections to these dependent claims is also requested. Moreover, as claims 27-30 depend from and incorporate all of the limitations of claim 1, 12, 19 and 23, respectively, removal of the rejections to these dependent claims is likewise requested.

III. CONCLUSION

For the foregoing reasons, applicants respectfully submit that the instant application is in condition for allowance. Early notice to that end is earnestly solicited.

If a telephone conference would be of assistance in furthering prosecution of the subject application, applicants request that the undersigned be contacted at the number below.

Respectfully submitted,



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